



BOARD OF EDUCATION.

OUTLINE SCHEME

FOR TEACHING

HYGIENE AND TEMPERANCE

TO THE SCHOLARS ATTENDING

PUBLIC ELEMENTARY SCHOOLS.



LONDON:

PRINTED FOR HIS MAJESTY'S STATIONERY OFFICE,

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OUTLINE SCHEME FOR TEACHING HYGIENE AND TEMPERANCE.

PREFATORY NOTE.

It is important that the teacher who is about to teach the rules of health in his school, or to organise such incidental teaching on this matter as may already be given in other branches of the school curriculum, should first give careful thought to certain considerations which will to some extent determine the character of his lessons.

The duty of safeguarding the health of children of school age is only in a limited degree a duty of the school. That the conditions and circumstances should be wholesome throughout the time the scholars are under instruction goes without saying; but the task of forming good habits in regard to such matters as food, clothing and cleanliness is primarily for the home. The School should doubtless supplement the practical discipline of the home in regard to such matters by furnishing the scholars, at the proper age, with the sound reasons which underlie the rules which the scholars are trained to observe. If the scholars come from homes where parental duties are well understood and systematically carried out, the teaching of hygiene need hardly go further than this.

But it is often the case that the standard of knowledge or duty among the parents is so low that the physical welfare of the scholars is endangered through the serious neglect in their homes of the fundamental rules of health. The school is practically the only available agency for discharging the neglected duty of the home in this matter; and is therefore forced, in the interests of the scholars, to assume the task of securing that they know these rules, and are encouraged to practise them.

It is in these cases that the proper teaching of hygiene is most urgently called for; and the determination of what should be taught is clearly of the greatest importance. Some schemes for teaching hygiene approach the subject by first expounding certain details of physiology, and in a few cases this part of the teaching is carried to excessive lengths. There are definite grounds for holding that this method of teaching the rules of health to *children* is faulty in principle.

In much of the teaching given to the scholars of a Public Elementary School, and perhaps most clearly so in the teaching of History and Geography, the main aim is to stimulate interest and to develop intelligence, and the accurate retention of the many facts on which the scholar's attention is at one time or another

concentrated is not of vital importance. It is true that the subject matter of Hygiene can, and indeed should, be handled in such a way that the teaching develops intelligence, encourages habits of reasoning, and enforces the lesson that neglect of important matters of health will entail certain penalties. But more than this is required; for whatever it is really advisable to teach children about hygiene should be so firmly impressed upon their memories that they will never forget it. The rules of health impressed upon the children should therefore be few and direct, and as little as possible encumbered with technicalities or quasi-scientific exposition; indeed, didactic teaching is necessary in this subject. It must further be remembered that living a wholesome physical life is a question of good habits even more than of intellectual convictions, and it cannot be expected that mere teaching in Temperance and Hygiene will be an adequate substitute for the training from infancy upwards which is found in every good home.

In the schools of prosperous neighbourhoods the parents will supply, or may be induced to supply, the practical training in good habits, for which the home is better equipped than the school. But in poor districts the school must endeavour, in this particular, to supply the deficiencies of the home. Scholars who are not under good home influences must find at the school the discipline of regular duties; without this it is almost hopeless to expect that children when they grow up will observe hygienic principles as a part of the ordinary routine of life. The regular performance of fixed duties is of course important in all schools as an essential part of education, but a good home will provide this discipline in its own sphere if the school does not. Where the homes are not good the performance of fixed duties in school is indispensable to the formation of good habits, because if these are not acquired in school they are not likely to be acquired by the scholars at home.

The training of the scholars in the observance of the rules of health should begin by getting them accustomed to rooms which are thoroughly well ventilated, scrupulously clean, and as bright and cheerful as circumstances permit. The school should be coloured throughout in bright tints, and the walls and ceilings should be washed or recoloured as often as they become noticeably dirty.

OUTLINE SCHEME OF INSTRUCTION.

The instruction given in Hygiene and Temperance may with advantage deal with most of the topics set out below.

1.—*The Home* :—

Punctuality, fixed duties.
Cleansing of rooms, furniture, and fittings.
Clothing, materials, cleanliness, and repair.
Air, windows, doors.
Warmth, fires, gas, coal, overcrowding.
Light, lighting, lamps, gas.
Water, washing, drinking, cleansing.
Money, earnings, spending, thrift, Savings Bank.

2.—*The Person* :—

Cleanliness, hair, skin, teeth, eyesight, hearing.
Erect carriage, posture.
Good and bad personal habits.
Breathing, perspiration, change of clothing and bedding:
Signs of good health.
Quiet speech, restraint, self-respect.

3.—*Eating and Drinking* :—

Meat, milk, cheese.
Vegetables, bread, puddings.
Fats, butter, eggs, bacon.
Tea, coffee, soups, broths.
Over-feeding, under-feeding, unwholesome or unpunctual feeding.
The path of food, the use of food.
Fresh air as food, bad air as poison.
Alcohol, its effects and dangers. Not needed by young people.
Tobacco.

4.—*Illness* :—

Minor ills, home treatment, accidents.
Fits, infectious illness.
When to send for a doctor.

NOTES AS TO THE TREATMENT OF THE TOPICS AT DIFFERENT
STAGES OF SCHOOL LINE.

The following notes are offered for the guidance of teachers in setting out the work for different classes and in dealing with the more important and difficult of the above topics.

INFANTS.

Formal teaching should not be given to young children on the laws of health or on the principles of Hygiene, but a few simple rules of health may very well be impressed upon young scholars and illustrated by the school discipline or by the practice of their homes, if the latter is sufficiently good to be appealed to with advantage.

I. CLEANLINESS.

Every scholar should be required to come to school with clean hands, face, and neck, and neatly brushed hair ; girls, in the interests of cleanliness, should come to school with their hair tied back. Boots and clothes also should be well brushed. If any scholars do not come to school properly cared for in those matters, they should be sent to the lavatory to wash themselves, or to brush their clothes, and, if necessary, should be shown how to do it. The children should be required to wipe their boots before entering the school.

II. SUNSHINE.

Infants should be taught that it is good for them to be out in the sunshine ; they require sun for growing as much as plants and flowers. The school should be kept as bright as possible, and sunshine should be freely admitted at all times when it is not too hot.

III. EATING AND DRINKING.

It is not good for children to be too particular over what they eat or drink. It would be sufficient to tell them :—

- (1) To eat slowly, both because it is good for them and because it is good manners.
- (2) To drink plenty of water, and milk if they have a chance.
- (3) To avoid beer and spirits which are bad for them, and stop their growth.
- (4) To eat enough clean wholesome food, but never to waste any.

IV. POSTURE.

Posture and movement should be as free and unconscious as possible. The teacher should only interfere when there is any strain, or really bad position. If the children must sit still for a short time, they should sit straight, but let the time be short. Generally speaking, the less young children think about how they walk, or sit, or stand, the better.

V. GAMES.

Games should certainly be encouraged in school hours ; they give the best opportunity for teaching children good habits of gentleness, unselfishness, and consideration for each other, and are obviously excellent for the infants physically.

VI. SLEEP.

It would be well to tell the infants that it is good for them to go to bed early—at seven o'clock if possible—and have a long night's sleep ; it would hardly be necessary to enter into the number of hours. Young children should get into good habits almost unconsciously, without spending time in *thinking* what is good or bad for them.

SCHOLARS OTHER THAN INFANTS.

LOWER CLASSES.

1. FRESH AIR.

The scholars should be given in rotation the fixed duty of keeping wide open the doors, and, if possible, the windows, during the time between the lessons, so as to flush the rooms with fresh air.

The teacher should talk with the scholars about the windows, doors, and fireplaces, and about any other means of ventilation there may be. They may be told that what they feel in the wind is moving air, and that this carries things with it. For example, attention may be drawn to the movement of smoke from a fire, or of steam from a boiling kettle, or of dust on a road in a strong breeze. The Scholars should learn that people who live where the air moves about freely are generally stronger than those who live in narrow streets where the air does not move easily. They should be told that when we open a window and feel a draught it means that air is moving in from outside, and that the more fresh air comes into a house or a school the better for those who live in the house or attend the school.

By talking with the scholars about their homes the teacher should find whether any of them sleep with the windows closed, and should tell them that if they want to grow up strong they ought not to sleep with the windows absolutely shut. If they are afraid of the cold they can open them just a little at first, both top and bottom, and then open them more and more as they get used to it.

By simple experiments with the smoke of brown paper the teacher can show the scholars that at some places air is entering the room, while at others air is leaving the room. As a rule, air enters a room by one way and leaves by another way, and air should be always entering and leaving a room.

The scholars should be asked about their own bodies and air, they will see that air enters the body at one time and leaves it at another, using the same path in both cases.

Some of the air which leaves a room leaves by the chimney, and when there is a fire the air that leaves by the chimney is different from that which enters the fire. The difference can be seen. We cannot see the difference between the air which enters by the door and leaves by the open window, or as a rule between the air which enters the body when a person breathes in and that which leaves it when he breathes out. Sometimes we can see a difference, *e.g.* in cold weather, and we can feel that we breathe out air which is warm ; if we breathe on a glass we find moisture there, so that there plainly is a difference. Although we cannot see a difference between the air which comes into a room and that which goes out, there will be a difference if there are people in the room.

All ventilation is meant to bring in air from outside a room and to get rid of the air which has been breathed out by people. The air which has been breathed out is not good to breathe in again, and if we stay long in a very crowded room with the windows closed we can feel a difference in the air which makes us sleepy or stupid. The difference is very noticeable when we go out from such a room into the fresh air, or come into such a room after being out of doors. Later we shall find out more about the difference between fresh and breathed air.

2. SUNSHINE.

The sunlight should be freely admitted to every part of the school except at times when the glare or heat would be unpleasant.

The difference between plants grown in the sunshine and those grown in the dark can be shown.

The teacher can talk with the children and ask them when the sun shines most, and when flowers are generally seen. She may tell them that there is a very close connection between the two. When the warm sunny days come in the late spring the scholars should be asked to look at the trees carefully day by day. They will probably observe the rapid unfolding of the buds and the teacher can then tell the scholars how necessary sunshine is for growth. If plants are grown in the school the scholars may be shown for contrast one grown in the light and another which has been grown in the dark. In the country they can be shown the difference between the leaves of celery above and below ground, and they can be shown that any leaves which grow under ground are never green, while those which appear above ground are almost always green. A man shut up in a dark place would soon become pale and ill, even though he had quite enough good food.

The teacher should encourage the scholars to go out of doors on Saturdays and Sundays, and during their holidays, for some part of every day, especially in fine weather, and to take walks in the country if possible, or, if not, in the public parks and gardens. They should be told that this is one of the things that helps them to grow and become strong.

3. CLEANLINESS.

The scholars should be asked to observe a room which is to be cleaned the next day, and should be asked to observe it again when it has been cleaned. They will learn in this way to notice dust or dirt on the floor, the furniture, or the windows.

In bright sunshine they should be asked to look at the dust in a sunbeam's path and they will understand that dust is always in the air whether they can see it or not.

The teacher should tell the scholars that dust and dirt are not only unpleasant, they spoil books and clothes, and are bad for health.

People who allow themselves and their homes to get dirty are not so strong as they would be if they were more careful in this matter.

Fevers and other dangerous diseases come from neglect of cleanliness, and though dirty people do not always get these diseases they are more likely to get them than clean people. Later the scholars will learn the reason.

The children should be told that each one of them should have a bath with warm water and soap at least once a week regularly. They should be told that they should wash and brush their teeth, and wash their mouths out with clean water, both at bedtime and in the morning. They may be told that by doing this they will be less likely to have toothache and will also feel better for it.

They should be told also that their underclothes should be changed and washed once a week ; and that when they leave their bedrooms in the morning they should take the bedclothes off the bed and spread them out over a chair, or over the end of the bed. Whether they sleep with open windows or not, they should always open the windows wide before leaving the bedroom if they are strong enough to do it for themselves.

Other small duties conducive to cleanliness and health may be impressed on the children at the discretion of the teacher ; and it may be well to remind them that in doing these things they are also helping their mothers or older sisters.

An occasional practical lesson might be the use of a duster to clean the desks or chairs. Any school material used by the scholars which becomes dirty and can be easily washed, should be washed at the school by the scholars themselves in a regular and systematic fashion.

4. EATING AND DRINKING.

The scholars should be told in regard to eating and drinking that :—

- (1) Food is the fuel for the body. One eats more in cold weather than in hot.
- (2) Food should be well chewed.
- (3) It is good to drink water, and much of it, but not during eating.
- (4) People should keep their lips closed while eating.

5. POSTURE.

Though rigid attitudes are out of place, care should be taken to check bad habits in sitting or standing.

In standing or walking children should throw their weight on the ball of the foot and not on the heel, they should hold their heads up and their shoulders back. In standing still the knees should be thrown back, and the back should be hollowed.

In sitting the body should be held upright, the shoulders should be kept back, and the back should be hollowed ; children should never be allowed to lean over their desks. The feet are best placed flat on the ground or foot-rest, but this point is perhaps of minor importance compared with those above mentioned. It is sometimes the case that the proper posture is exaggerated and a strained position is taken up. Care should also be taken lest weak children tire themselves in a well-meant attempt to please the teacher. A tired child should be pressed neither physically nor mentally.

Above all, the teacher should avoid checking the free movement of young scholars for any long period at a time.

6. PLAY.

Games and intelligent play should be encouraged in the playground. In some cases there may be no tradition among the children by which good playground games are learnt almost unconsciously. In these cases the teacher at no great trouble can usefully organise good games, and once they are well understood and liked they will be preserved without much further attention.

7. SLEEP.

Every child under the age of ten years is better in bed at seven o'clock, and should remain in bed till seven o'clock in the morning. Ten hours of sleep in every twenty-four are necessary for proper growth.

Scholars should be told these things, and if any child is unable to sit or stand well without fatigue or to attend to interesting lessons, the teacher should ascertain if he gets enough sleep ; in some cases young children habitually get far too little sleep.

HIGHER CLASSES.

1. FRESH AIR.

The class will know that a room in which several people work or sleep, or a schoolroom or classroom crowded with scholars, gets "close" or "stuffy." People who stay in such a room feel tired, do not want to work and may get a headache. After sleeping in a well-ventilated room people awake fresh and active. If sleeping for one night in bad air has such bad effects, clearly to sleep night after night in such rooms will do great harm. What is the reason for all this ?

The teacher should invert a tall jar over a lighted candle. The candle will be observed to burn less and less brightly and will finally go out. If the jar be quickly lifted and placed over another candle that also will go out, and at once. If the jar be removed before the candles go out they will revive and soon burn as well as ever. It is clear that fresh air is necessary for burning ; air in which things have burnt for a long time is not fit to keep up burning.

The candle, if it is to burn, requires something which is in the air. Without that something the candle will not burn. So our bodies require something from the air, and if that something has been used up by other bodies the air is not fit for us to use.

For many reasons we believe that air contains in addition to what is wanted for burning, other substances which do not help burning.

We call the substance wanted for burning "oxygen," the other substances make burning steady. A match which burns in air will flare up and soon burn through in "oxygen." If the air we breathed were pure oxygen we also should burn much faster.

When we breathe, and when a candle burns, oxygen is used up, and new things are made which are bad for us to breathe, and will also stop burning. Air which contains these things we shall call "bad" air to distinguish it from "good" or "fresh" air. Ventilation not only brings in more oxygen in the fresh air, it helps to carry off the bad air. This is why ventilation is so important.

A stuffy room smells nasty. A coal fire smells, a wood fire smells, a smoky lamp smells. All these smells are different, but in each case there is "bad air" and "bad air" is made even when the lamp burns clearly and gives no smell. A nasty smell is a sure sign that the air is bad. As soon as a room smells, fresh air is necessary to sweep away the bad air.

Some people have flowers and plants in their bedrooms. In the night these use up the oxygen and make the air bad, and it is better that sleeping rooms should not contain plants. In the daylight plants do not have this bad effect.

If the fresh air enters by a narrow opening there will be a draught, and draughts are often unpleasant and sometimes dangerous. A window opened wide gives less draught than a window opened only a few inches.

2. CLEANLINESS.

The scholars will know how often the school is cleaned and will be able to picture for themselves what would happen if it were not cleaned. The room would be dusty, the dirt brought in on the boots (even after the scholars have used the doormat) would accumulate on the floor, and pieces of paper would be scattered about the room. The air would smell even if the windows were opened, and the dirt would get on hands, faces, clothes, books, desks, and so on.

All this would be very unpleasant, but that is not all. A fresh ripe apple placed in a dirty room would soon go rotten. A saucer of strawberry jam placed in a corner of the room would soon be covered with a white film and would become nastier to eat the longer it remained in the room.

What is this film on the jam, or "mould" as it is called? If the jam is closed up so that the air cannot get at it there is no "mould." Therefore it must be something in the air, and something of which dirty air has more than clean air. People have found that the "mould" is a kind of plant which grows well in jam, and that the seeds of this plant float in the air. There are very many kinds of this *invisible seed*, and the air of towns contains far more of them than the air of the country, and the air of the country has more than the air of the mountains. The more of this seed there is in the air, the more the plant will grow on the jam. If the school is not cleaned these invisible seeds will settle with the dust on the walls and furniture.

When a room is cleaned or dusted the dirt or dust is collected and removed. It is no good dusting a room unless the dust is collected and carried away ; in some cases it is necessary to sprinkle water, or damp tea leaves, or sawdust, on the floor of a room to prevent the dust and dirt from rising into the air. In other cases the dust can be collected on a dry duster and carried out so. The teacher can illustrate this point by using the duster on the blackboard and showing that the duster after being used several times will not clean the board so well as at first.

In the open air, even in the towns, the wind will prevent undue accumulation, and the rain will tend to wash away dust and dirt (and therefore this invisible seed). In summer, for instance, a town smells much sweeter and fresher after rain. By cleaning a school regularly or by cleaning a house regularly the amount of this invisible seed is kept down, and the plants produced by the seeds are prevented from growing up.

Scarlet fever and measles are caused by some kinds of invisible seeds. If people go into a room where this seed is common, as it is if there has been a person with fever or measles in the room, some of it will get on their clothes and some may get into their bodies, and grow up there into the fever or into measles as the case may be. When there has been scarlet fever in a room this seed will have fallen everywhere and must be killed, or as we say, the room must be disinfected, before it is safe to use it again.

If the school is not swept and washed the dirt will make a kind of nest where all kinds of invisible seeds gather and grow. Some of these do no harm, but others are most dangerous. It is the same with houses, which need regular cleaning just as the school does. It is a good plan to remove dirt and dust from each living room once a day, and to take out the furniture once a week in order to brush the carpet, dust the walls, and wash the paint. Once a year the carpet should be taken up and beaten, and the floor and other woodwork should be washed with soap and hot water containing a little carbolic acid. The whole house should be cleaned in this way in the spring or early summer.

The body also needs cleaning. Even though people feel as well when they are dirty as when they are clean, in the end it does one harm to be dirty.

For instance, people who take care of themselves never fail to brush their teeth and wash them every day. They are less likely to have toothache than people who do not wash and brush their teeth, even if they do not escape it altogether. Why is this ? After eating, a white substance often clings to the teeth. This has in it invisible seeds which in growing rot and decay the teeth. If the teeth are well brushed the white stuff containing the seeds is washed away and the decay is thus prevented.

Then the skin should be washed frequently because many invisible seeds stick to it. If the skin is not broken no harm may be done, but if the skin is broken the seeds grow and cause decay and bad wounds. Some kinds of seeds do harm even when the skin is sound. By washing the skin often enough these invisible things do not get the time they require for doing harm.

This is not the only reason why people should be clean. The hair and nails are always growing ; and so is the skin. The old skin can be noticed if the skin is rubbed hard by a wet hand without soap. In scarlet fever the skin comes off like a glove. A snake casts his skin as a whole once a year. Our skins are renewed little by little. Washing helps to remove the old skin.

The skin is not like a glove through which nothing can pass. It is like a very fine network, and the openings are called pores. The pores can sometimes be seen on prints of the markings of the fingers. If we do not wash the pores become choked up. What is the harm of this ? If people run in hot weather we know that sweat comes out on their bodies and faces. Even in cold weather sweat comes out of our bodies though invisibly. A mirror held close to the hand will become dim. People are always giving off sweat through the pores of the skin. If we get very hot the sweat often

runs down our faces, and we sometimes taste it and find it is salt. It contains many of the waste things our bodies make, and, if we did not sweat, these waste things would remain in our bodies and do no good there. Careful washing is necessary to keep the pores open ; if they get choked the waste substances may collect and cause bad complexions or ugly eruptions. Careful washing will help every child to have a clear skin and a good complexion.

What would happen to a person who had a plaister covering his mouth and nose ? He would choke and soon die because he could not get the oxygen he wanted, and could not get rid of the bad air which is made in breathing. If a plaister covered the skin, it could not easily get rid of the waste things the body gives off when we sweat and they would soon poison us. Dirt helps to choke the skin ; and though it would never do it thoroughly enough to prevent any of the waste escaping as sweat, it would still prevent the skin from working as well as it should. The waste will be got rid of less thoroughly than it should be, if the skin is not well washed periodically. If people want to keep well and strong they must keep the skin working well, just as they must breathe good air.

The clothes people wear next to their skin should also be kept clean. Some of the waste which escapes from the skin does not escape from the clothes ; these if not changed, gradually get clogged with the waste and thus become unpleasant and also help to choke the skin.

3. EATING AND DRINKING.

The body is in some ways like a fire or a candle. In a fire it is the coal that burns ; in a candle it is the wax of the candle ; in the body it is the food we eat, though the burning is very different from that of the fire or candles.

As a candle burns it gets lighter and lighter. Similarly as the body burns, it gets lighter unless the material which is used up in the burning is replaced by taking food.

A candle will burn until nothing is left of it. The body will not do so. It requires food, *i.e.*, fuel from outside itself ; and just as the burning of a fire cannot long go on without fresh fuel, the body ceases to work if it has no food.

When people eat, the food they have chewed and swallowed goes into the stomach, then into the bowels, and then into the blood, and so on. Inside our bodies food is cooked, or changed, or as we say, digested, and all the goodness of the food is taken up into the blood, which is pumped by the heart all through the body into every little part. With the blood the goodness of food goes to every part of the body. Every part of the body is wasting away, but the goodness of food carried everywhere by the blood repairs the waste. Without food, no fresh goodness gets into the blood, the waste of the body is not renewed ; a person without food would soon die through his body ceasing to work.

Food is not all of one kind. What happens when milk stands ? Cream rises to the top. Cream has much fat in it. What happens when milk stands in the air for a day or two ? It turns sour. If then warmed it separates into a white stringy stuff, called curds, and a watery stuff, called whey. Whey is sweet, and contains water and sugar. What happens when new milk is shaken up for a long time, churned as it is called ? Butter is made. Butter cannot be made of milk from which the cream has been removed, but whey and curds could be made.

Milk contains four different things—water, sugar, fat, and curds. There are other things which are important, but not so important as these.

Milk is all that babies want, and all they ought to have. It is very bad to give a baby anything else. Milk also contains all that is really necessary for older people though they do not live on it. For older children milk, bread, butter, fresh meat, vegetables, fresh fruit, jam, milk puddings, are all good things. The scholars may be told that tea and coffee are not really so good for them as milk or water, and that beer or spirits are very bad.

What is there in such things as meat, potatoes, suet pudding, bread and cheese, and vegetables? Meat contains fat and lean. The lean of meat is very much like the curd in milk, and the fat of meat is like butter. There are also things like gristle, and other things, which are not important just now. Thus meat has two things like the things in milk, namely, fat, which is like butter, and lean, which is something like curds.

What is there in potatoes? A cooked potato held in the mouth and chewed for a long time will taste sweet. It contains starch which in the mouth changes to sugar. Starch may be called the twin brother to sugar. The starch used in laundries is made from potatoes, and there is little but starch in potatoes.

Suet pudding is made of fat and flour. Flour contains starch and another substance which when mixed with water is sticky. If the starch in flour is washed away the sticky substance is left. This is a kind of curd also. Thus suet pudding contains starch, curd, and fat.

Bread is made from flour, so consists of starch and curd.

Cheese is made from milk and contains curd and fat.

Thus the ordinary things people eat contain things which are like the things that are in milk beside water, namely, curds, fat, and sugar.

Now each of these taken singly will not be good for health. If people lived on potatoes alone, that is, on starch or sugar, they would soon fall ill and starve.

If they tried to live on butter or fat alone they would starve.

If they tried to live on cheese or the lean of meat alone they would not starve, but a great deal would be required, it would be very costly and not good. People must have curds, but they ought to have starch and fat also in proper quantities. That is why, if they can, people eat two or three different kinds of food in order to have all these important things in proper quantities.

Any one of these things, curds, fat, starch, or sugar, would burn quite easily, if it were dried. A piece of fat or a lump of sugar or a piece of starch will burn, and dry lean meat will burn.

These things are burnt in the body, but without a flame. They first become part of the blood and then are carried by it to every part of the body; the body would otherwise waste away like the candle or the fire.

By eating the right quantity the burning of the body is made steady and regular. If people eat too little the burning is not well kept up and they fall ill.

By eating too much harm is done. Either the stomach gets rid of the unnecessary food so that its goodness is wasted, or the goodness of it gets into the blood, but cannot be used by the body which does not waste sufficiently, so that the food which cannot get back from the blood does harm and chokes the burning just as overmuch coal on a small fire may put it out. Too much food in the blood will be a kind of poison.

Now the three things, curds, starch, and fat, in burning give people their strength. Coal burning in a furnace under a boiler makes the steam which moves the parts of the engine. The steam cannot be made unless something is burnt to heat the water; unless something is burnt in the body it will not work.

Beside these things that burn in our bodies, there are other things which won't burn, but which people need in order to keep well. First of all there is water, which is necessary for the special kind of burning which goes on. The burning in our bodies is a wet burning. When quick-lime is thrown into water there is great heat, and when hay is stacked too damp it may become so hot through wet burning as to take fire. It is the wet burning of our food that keeps our bodies warm. Our clothes only prevent our bodies from cooling too quickly. Water helps also to remove the waste which is made in the burning: if this were not removed the working of the body would be interfered with, just as a fire would burn badly if the ashes

were never moved. Water does not burn itself, it is one of the things which is made in the burning ; but we must have it and could live longer without eating than without drinking.

Besides water, curds, fat, sugar or starch, our food contains other things which do not burn, on which we could not possibly live but which are necessary if our bodies are to work properly. These things are found in all the foods which men eat all the world over. Salt is the most important thing of this kind and all people want more salt in their food than there is naturally there.

Besides these two kinds of food there are things which people often take because they have another special effect.

Tea, coffee, cocoa, and chocolate are all nearly the same, all produce nearly the same effect. Some people take these and say that they cannot get on without them, and are all the better for them. Other people never take these things and do very well without them. Until 200 years ago no one in England took these things. They are not necessary like the foods which we use to make the substance of our bodies, such as meat, bread, fat, or even like the salts which help us to make a proper use of the curds, sugar and fat. Tea will burn, but people do not take it for the sake of this quality and if they tried to live on tea alone they would starve and die sooner than if they had nothing but water. If people are tired and drink tea they feel able to go on working again. But the effect soon passes away, and if they became really tired out, and then took tea or coffee to help them to work they would certainly be doing a most unwise and dangerous thing. People who have worked so hard that they are tired out need real food and a good rest.

People cannot work on for ever without needing a rest. A person might be able to do so much work without feeling tired, just as he might have so much money to spend before his purse is empty. The faster he spends his money the sooner his purse will be empty, and the faster and harder a man works the sooner he will have to take a rest in order to gather together more power. Tea and coffee and cocoa and chocolate help people to put out their strength faster than if they did not take them ; but they do not give any strength which is not already there, they only help people to tire themselves more than ever. People who take much tea to help them to work soon exhaust themselves for the time being, and do themselves harm. If a horse has a long way to go, and he is not very fresh a touch or two with the whip just now and then may be a useful thing, and provided the horse gets a good rest at the end of the day he will be none the worse the next day. But if you whip a horse incessantly and make him put out his strength very fast he may exhaust himself before he reaches home. It is no use whipping a tired horse. It is no use, and it is harmful, to take tea when what you really need is rest and real food such as meat or milk or bread and so on.

People should never take tea which has been long standing in the teapot with the tea leaves. If you taste such tea as it comes out of the pot you will find that it is bitter and not at all pleasant, and if you take this bitter tea and allow it to stand you may find that a white substance, which looks not unlike fine sugar, will settle out of it as it gets cold. This white substance has a bitter or drying-up effect in the mouth. If you take this stewed tea it will prevent you from getting the proper goodness out of your food. Many people are very foolish in trying to live on tea and bread and butter, and they are still more foolish when that tea is always stewed tea. Very great harm indeed is done in this way. If people drink tea it should be soon after it is made, and the teapot should be washed clean after every meal in which tea is taken.

Some people take other things besides tea. Beer, wine, gin, brandy, and other kinds of drink are all alike in this, they contain spirits of wine. Some contain more spirits of wine than others, but this is the most important thing in these drinks. Spirits of wine burns in the air, but it hardly burns at all in

the body. It is not strength giving like curds, or fat or sugar. When a man drinks beer or spirits you can often smell it. This shows that it is not all changed in his body like the food which gives us strength. In some of these drinks there are things which will give us strength, e.g., sugar, but there is so little of these things that it is not worth while considering them. A gallon of beer contains not much more nourishment than a lump of sugar.

Those who drink beer therefore do not get strength out of it by using it up in the body as they use the real food like meat, bread, and so on. People often drink beer instead of water when they are thirsty because they prefer its taste. They drink it either because they like it, and do not care whether it is dangerous or harmful, or else because they find it helps them to use more quickly the strength they have got out of the real food they have eaten. It is like a whip, just as tea, coffee, and so on, but it is much more effective and violent in its action ; and a healthy person ought to need no whip such as that supplied by tea or beer. He ought to be able to do with the real food he gets and with the proper amount of rest. But everyone is not always perfectly healthy and fresh, and many people cannot take a rest just when they need it ; even the best of horses sometimes needs the touch of a whip. All the world over tea or coffee or other things like these, or else beer, wines, spirits, or things like these are drunk by people in order to freshen them up. If these things are taken in small quantities they do no harm, though they are never necessary for healthy people and never do them any good ; but as soon as ever people depend upon them instead of on proper food, they are doing a most dangerous thing. Children should never take beer, and are better with milk and water in place of tea and coffee.

Although tea and beer have a similar effect, there is a great difference between them. We may take too much real food, too much fat, too much sugar, and so on, and too much even of these good things does you harm. You may take too much of the salts that help you to make use of your real food. Many things which are good in very small quantities are very bad indeed even in moderately large quantities, and there are certain things which must not be taken even in very small quantities indeed. These things we call poisons. You can easily take too much tea, especially at bed-time. Strong tea taken as you go to bed prevents you from sleeping, and exceedingly strong tea will give you a headache, cause you to be startled at every little incident that goes on around you, will make you "jump" as people call it, will act as a poison. Many people indeed do poison themselves with tea, that is to say although they do not die they are always much less well than other people.

It is even easier to take too much beer, it is easy to poison oneself with beer as people do when they get drunk. It is very easy to take too much beer without being actually drunk. When a man after taking beer has his face flushed, or feels heavy or sleepy or stupid, or cannot think clearly, he has had more beer than is good for him. Any person who takes beer would know by this when he had taken too much, but it is very easy to take too much without even experiencing these feelings, which are plain proof that you have taken enough to alter your ordinary condition and to make you less fit either for work or for sensible enjoyment of your own time. Beer, therefore, is very dangerous. But there are other drinks called spirits, such as gin, whisky, or brandy, which are far more dangerous even than beer.

Many people do very well without beer. If they feel tired, or if they feel that they need freshening up for the work that lies before them, they can take good food and a good rest, or perhaps they drink tea or coffee. Some people say that no one ever needs any beer or wine or anything like that so long as he or she is well ; and if all people had perfect health and could work or rest as they pleased, beer and wine might well be quite unnecessary at any time. Others say that many people do need an occasional whip, and that tea or coffee is not sufficient for their purpose. But they are speaking of grown up

men who very often must go on working when they feel that a short rest would do them good.

But beer and spirits are *always* bad for children; and they are better without tea or coffee. Healthy children need real food, plenty of sleep, plenty of fresh air and sunshine, and enough play and exercise; anything in the shape of stimulants is useless and harmful to them.

There is another point everyone ought to remember about beer and drinks of this kind. The more you drink, the more you want to drink. If people eat more real food than is good for them they will have a distaste for eating. If they drink a little too much beer it makes them want more, and then still more again, and so on. But if people drink more than they need of water or milk they will feel satisfied and will prefer not to take more.

Every sensible person knows too that even with older people it is the easiest thing in the world to take too much beer or too much spirits. Every one should be most careful in drinking these things in order that he may not take more than the little which is, or may be, of real help.

Every sensible person knows that thousands and thousands of people poison themselves by drinking too much beer or spirits, by making themselves either drunk, or so stupid as to be almost drunk, and therefore in any case unfit for their work.

Every doctor knows that there are many different kinds of diseases which attack persons who never get drunk, who never even know that they are taking too much, but who drink day after day more beer or wine or spirits than is good for them.

Everybody knows that apart from the risk of disease people who drink too much beer or spirits are likely to become slovenly, to lose control of their good character and to neglect their duty. Regular employment and wages are lost, so that many others who depend upon those wages for their home and living will suffer in addition to those who actually drink.

For all these reasons beer or spirits or wine are by far the most dangerous things that people are ever likely to drink.

4. TOBACCO.

Boys should be warned not to smoke at all while they are under twenty years of age, and told that even when they grow up it is very easy to smoke too much. Boys who smoke will be less quick at running games. It is also an expensive habit. No boy ever derived any benefit at all from smoking, and many boys have done harm to themselves through it. Many boys do it because grown-up people smoke, but no one thinks a boy is any older or wiser because he is smoking.

Sometimes grown people smoke because they find it is restful; but children never need anything of the kind.

Even though tobacco in itself may not prevent boys from growing, it often makes them disinclined to eat as much as they need; so that *through* using tobacco their growth may be hindered.

5. ACCIDENTS AND ILLNESS.

In case of serious illness or bad injuries it is always advisable to send for the doctor. But for many little ailments it is quite unnecessary to send for, or go to, a doctor if people know what remedies to apply. Trivial accidents can often be cured in this way, although if neglected they may cause much trouble or even suffering. Everyone, therefore, should know how to treat cuts, burns, sores, and matters of that sort.

(a). Cuts.

The best thing to do for a cut is to wash it free from dirt or glass by means of warm, and if possible boiled, water. It is better to use weak carbolic acid in the water. If possible a syringe should be used as it is better that the flesh itself should not be touched by a sponge or by the finger. The edges should then be pressed together, and the place bound up with clean but old calico, or still better, linen. New material often contains substances which might make the cut sore and prevent its healing quickly. Slight cuts are best cured by means of sticking-plaster; if it is necessary to draw the edges of the cut together the plaster should be made into small strips and each should be separately used. It is often useful to keep old gloves and to use pieces of them as a protection for cut fingers.

If a cut is very deep, and bleeds very rapidly, the best thing to do is to try to reduce the bleeding by means of a tight bandage tied over the bleeding surface. This must be made still tighter by pushing a stick through it and twisting it as much as is necessary. A second bandage similarly tightened should be made on the side of the cut nearest the body. If this fails to arrest all the bleeding another bandage may be made at the other side. The doctor should, of course, be sent for in such a case without delay.

If, however, the bleeding is not severe it is not necessary to wait for it to stop before binding up the cut. Any clot that may form should be left if there is no dirt. It is the clot that helps to close and heal the wound. Healing cuts must be carefully protected from dirt.

(b). Gatherings.

Dirt sometimes gets into a cut or wound and makes it gather or fester. Yellowish matter collects under the skin and there is heat and throbbing in the part affected. Very serious trouble may follow if gatherings are not attended to at once. If it is very bad it is best to go to the doctor, who will cut it so as to get the diseased substance away. If it is only a small gathering, and not yet open, a hot poultice of bread and water is a good thing to use. The matter and dirt will come away, and if the pain is relieved it will probably be necessary to do nothing more than poultice and bind up in order to cure the ailment. If the pain continues or increases a doctor should always see the sore.

(c). Burns.

Slight burns are not difficult to treat. Anything that will keep air away from burnt skin will be useful in relieving the pain and perhaps in preventing blisters. Oil is the best thing, but flour or even soap will do. If the burn is a bad one oil should always be used.

If a person's clothes take fire the *only* sensible thing to do is to suffocate the fire. The person should be made to lie down and should be covered with sacks, rugs, or other heavy things which should be pressed tight on the burning garments.

(d). Sprains or Bruises.

A bad blow may not break the skin, though it bruises the flesh or damages the sinews which fasten the muscles to the bones. Cold water bandages and rest for the injured part are useful. If not too painful, it is good to rub the injured part with the fingers, if necessary using oil or grease to keep down the heat which dry rubbing would cause.

(e). Insect Bites or Stings.

If a bee, a wasp, or an ant stings or bites anyone it is a good thing to suck out the poison as soon as possible ; and then to bathe the place in clean water. The sooner the poison is sucked away the better.

(f). Fits.

If a person loses consciousness and lies still, he has fainted. If the face is pale the person should be placed flat on the floor in an airy place, and the clothes about the throat, chest, and stomach should be loosened. If the face is red it is best to raise the head and loosen the clothes. People should not crowd round a person who has fainted, for they keep the air away. Strong smelling substances, such as smelling salts or liquid ammonia or even vinegar should be placed on cloths and held under the person's nose ; when the person recovers, a drink of cold water is good for him. People who faint often should see a doctor.

People who fall down unconscious, but do not lie still, should be placed at length with their clothes loosened on a mattress or quilt, and all things against which they might hurt themselves should be removed. The doctor should always be sent for in such cases. Every person who has had a fit should be made to rest quietly on recovering consciousness.

(g). Bleeding.

People who are bleeding at the nose should be placed in a comfortable position with the head raised and their clothes loosened. Cold water on the temples or a piece of cold metal on the nape of the neck will help to stop the bleeding. If it persists the doctor should be called in.

(h). When to send for a doctor.

If a child has a sudden cold in the throat or nose, a very hot face, a rash, a swollen neck, a fit of sickness or shivering, or a cough ending in a whoop, it is possible that he has been attacked by infectious disease, and a doctor's advice should at once be taken : in the meantime the child should, as far as possible, be kept apart from other children.
